Mantua City
Community Transportation Plan

Final Report • Meetings held March 7-8, 2006

Mantua City
Community Transportation Plan

Meetings Held March 7-8, 2006

Prepared as a community involvement project by:

Mantua City

UDOT Planning Section

Mantua City
Community Transportation Plan

Mayor	**Robert Ash**
City Council	**Scott Butler** **Don Wallentine** **Richard Jeppsen** **Jan Palmer**
Planning and Zoning Chair	**John Hurd**
Planning and Zoning Director	**Bryce Jeppsen**
Chief of Police	**Jim Jones**
Public Works Director	**Harper Johnson**
Town Clerk	**Adriana Forsgren**
Asst. Town Clerk	**Mary Roper**

Table of Contents

Table of Contents

**If available for the study*

Figures, Charts & Tables

Figures

Charts

Tables

**If available for the study*

1. Introduction

1.1. Background

Mantua was incorporated **May 12, 1982**. Much of the history of Mantua is connected to Box Elder County and areas round about.

The geography of Box Elder County Area: 5,614 square miles; population: 36,485 (in 1990); county seat: Brigham City; origin of county name: named for the many box elder trees growing there; principal cities/towns: Brigham City (15,644), Tremonton (4,264), Garland (1,637), Willard (1,298), Perry (1,211), Honeyville (1,112), Bear River City (700), Clarkston (645), Corinne (639); economy: agriculture, aerospace/defense; points of interest: Willard Bay, Crystal Hot Springs, Brigham City Museum and Gallery, Golden Spike National Historic Site, Box Elder LDS Tabernacle in Brigham City, Willard Historic District, Bear River Migratory Bird Refuge.

Located in the upper northwest corner of the state of Utah, Box Elder County is part of the Great Basin region and embraces a large land area extending from the west spur of the Wasatch Mountains to the Idaho border and westward to Nevada. It includes portions of the Great Salt Lake and the Great Salt Lake Desert. On the east are the lower course and deltas of the Bear River, the Malad River Valley, and the Promontory Mountains. Diverse in topography, the county contains rich farmlands as well as extensive marshlands at the mouth of the Bear River.

Prehistoric big-game hunters seeking mammoths, camels, and bison roamed the area as early as 12,000 years ago, as did Indians of the later Plains Culture. Danger Cave, Promontory Caves, Hogup Cave, and Shallow Shelter are among the important archaeological sites found in Box Elder County. During the 1820s and 1830s fur trappers, including Peter Skene Ogden and Joseph R. Walker, explored the eastern and northern parts of the county. Permanent white settlement began in 1851 when a group of Mormons took up land in North Willow Creek (Willard). Brigham City was settled that year. Because the land was already inhabited by Shoshoni Indians, livestock raids and violent clashes between Indians and settlers were common until Territorial Governor James Duane Doty negotiated the Treaty of Box Elder on 30 July 1863 in Brigham City.

In 1856 the territorial legislature created Box Elder County from part of Weber County. Its boundaries were redefined in 1880 when the legislature divided the water and islands of the Great Salt Lake among Salt Lake, Davis, Weber, Tooele, and Box Elder counties.

The most significant event in Box Elder County history took place on 10 May 1869 at Promontory when the driving of the Golden Spike joined the Central Pacific and the Union Pacific railroads to complete the transcontinental line. Corinne, a feisty, non-Mormon boomtown, became the freight transfer point for goods shipped to Idaho and Montana. In July 1870 Corinne

residents spurred the founding of the Liberal party to oppose the Mormons' People's party.

Agriculture has always played an important role in the economy of Box Elder County. Some 43 percent of the county's land is used for agricultural purposes. Besides the standard crops of hay, grain, and alfalfa, beginning in 1901 sugar beets were also raised, and kept two sugar factories, one in Garland and the other in Brigham City, operating for many years. Abundant fruit orchards and garden crops continue to contribute to the local economy. Since 1957, when Thiokol Chemical (now Morton-Thiokol) began its Brigham City operation, defense and aerospace have dominated the local economy and presently employ some 5,000 people. Morton-Thiokol built the Minuteman missile and the space shuttle booster rockets. (Written by Linda Thatcher**,** www.onlineutah.com**)**

Mantua is five miles east of Brigham City on US-89. It had a series of early names, including Little Valley for its location, Flaxville because the early settlers concentrated on raising flax, Copenhagen because a majority of the settlers were Danes, and Geneva for the Swiss city. Lorenzo Snow, fifth president of the Mormon Church, named the town after his birthplace, Mantua, Ohio. There is a counterclaim by some that the name comes from the early French-Canadian trapper's loose cloak, a Manteau. (Written by John W. Van Cott**,** www.onlineutah.com**)**

1.2. Study Need

Mantua has seen a 18.95**%** population increase in the last decade and a 27.40**%** population increase in the decade before. From 1980 to 2004, the population has increased 61.6%. Yet, in the last few years the population has started to decrease. Population in the Cache Valley area has shown an overall increasing trend and a well-established transportation plan is needed to provide direction for continual maintenance and improvements to Mantua's transportation system.

With the growing population of Mantua the need for system improvements and a more extensive transportation plan is necessary for Mantua and the surrounding area.

Some of the major transportation issues around the State are as follows:

- Safety
- Railroad crossings
- Trails (bicycle, pedestrian, and OHV)
- Signals
- City interchange aesthetics
- Connectivity of roadways
- Property access
- Truck traffic
- Alternate routes
- Speed limits

Mantua recognizes the importance of building and maintaining safe roadways, not only for the vehicle traffic, but also for pedestrians and bicyclists.

1.3. Study Purpose

The purpose of this study is to assist in the development of a transportation master plan for Mantua. Mantua could adopt this plan as a companion document to the City's General Plan. With the transportation master plan in place the City can qualify for grants from the State Quality Growth Commission.

The primary objective of the study is to establish a solid transportation master plan to guide future developments and roadway expenditures. The plan includes two major components:

- Short-range action plan
- Long-range transportation plan

Short-range improvements focus on specific projects to improve deficiencies in the existing transportation system. The long-range plan will identify those projects that require significant advanced planning and funding to implement and are needed to accommodate future traffic demand within the study area.

1.4. Study Area

The study area includes Mantua and land adjacent to it that is in Box Elder County. A general location map is shown in Figure 1-1. A more detailed map of the study area and City limits is shown in Figure 1-2. The study area was developed by Mantua and approved by the Mantua Community Transportation Plan Technical Advisory Committee.

The roadway network within the study area includes US-91. This roadway provides a vital function to Mantua, to Box Elder County and to the State of Utah. US-91 connects all points east and west including Brigham City and Cache Valley.

Figure 1-1. Location Map

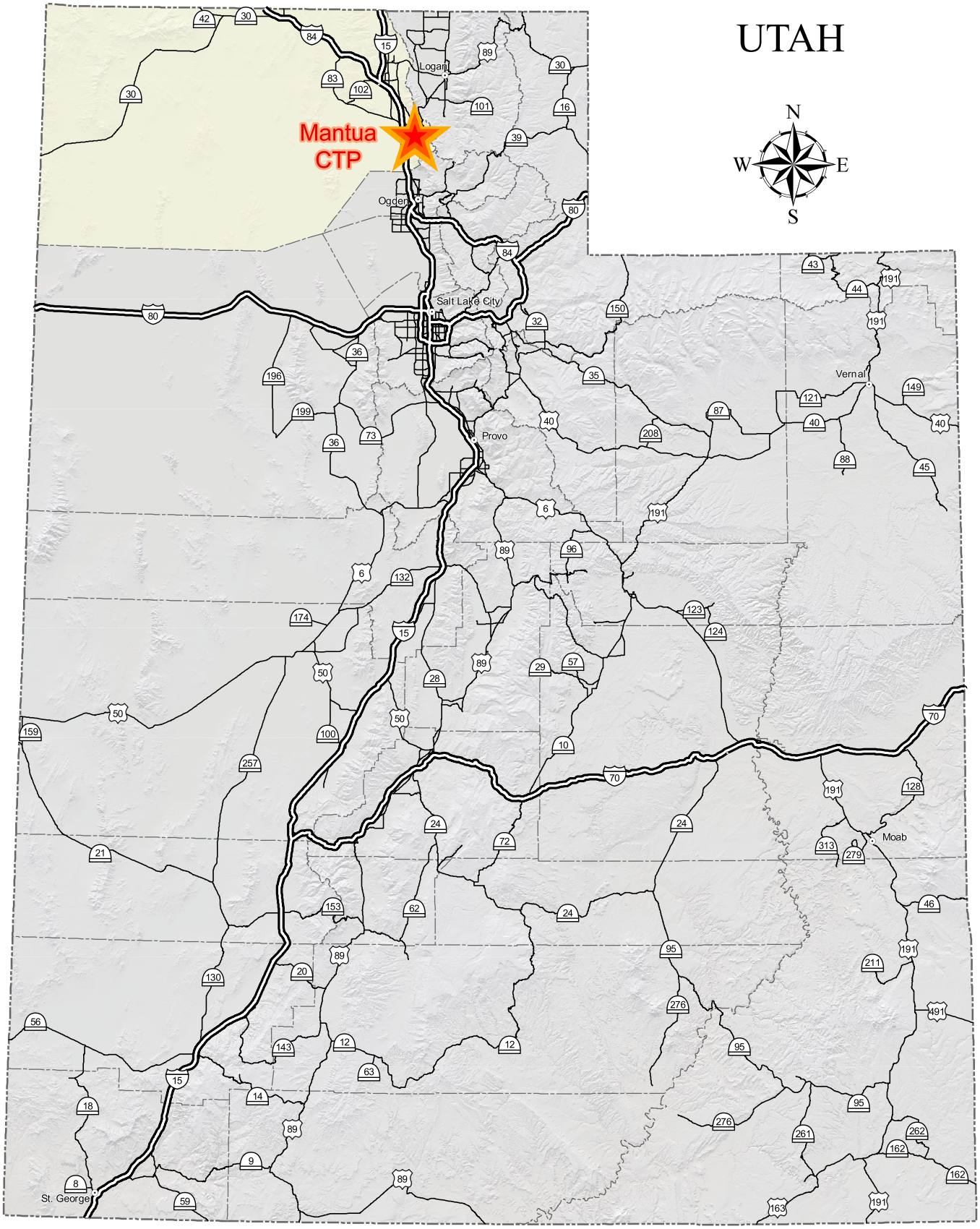
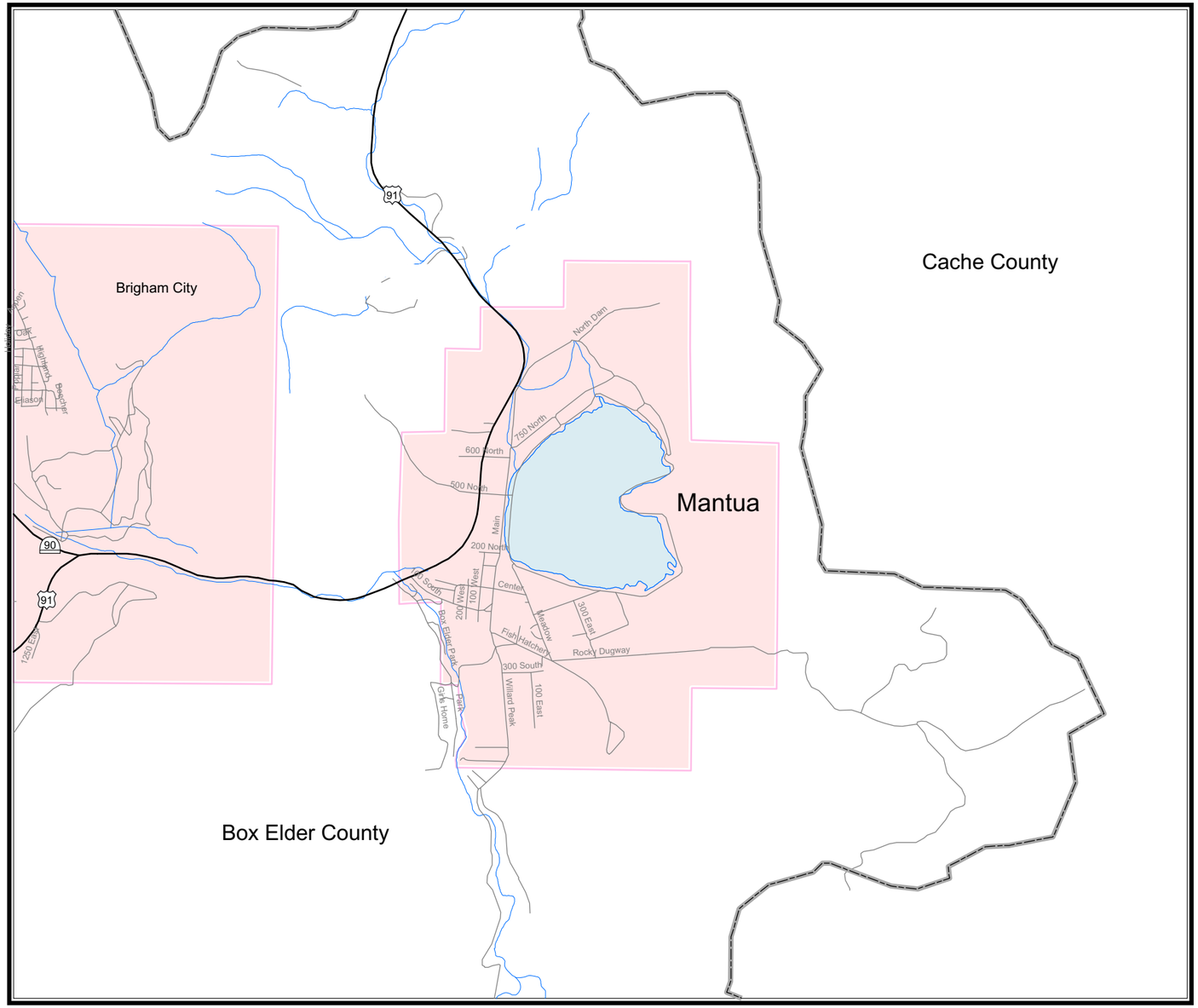
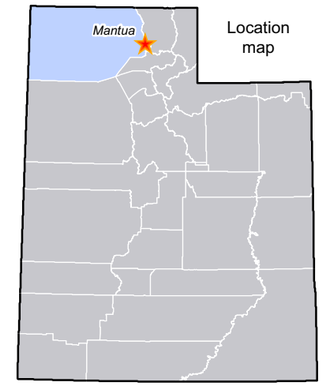


Figure 1-2. Study Vicinity Map





N

State Roads
Other Roads
Water Courses
Railroad
Study Boundary
City Boundaries

1.5. Study Process

The Study, which began in March 2006, is proceeding as a cooperative effort between Mantua, UDOT, and local community members. It is being conducted under the guidance of Mantua Officials.

The following individuals participated in the initial meetings to provide input used to create this document. This group listed below will be referred to as the Technical Advisory Committee, or "TAC," for this document.

- Robert Ash, Mayor, Mantua
- Scott Butler, City Council
- Don Wallentine, City Council
- Richard Jeppsen, City Council
- Jan Palmer, City Council
- John Hurd, Planning & Zoning Chair
- Bryce Jeppsen, Planning & Zoning Director
- Adriana Forsgren, Town Clerk
- Mary Roper, Asst. Town Clerk
- Jim Jones, Chief of Police
- Harper Johnson, Public Works Director

The study process for the Mantua Community Transportation Master Plan consists of three basic parts: (1) inventory and analysis of existing conditions, (2) projection of future conditions, and (3) development of a community transportation plan (CTP). This process involves the participation of the TAC for guidance, review, evaluation, and recommendations in developing the CTP to include development of future projects for the identified study area.

The TAC will evaluate each part of the study process. Their comments will be incorporated into the study's final report draft. The remainder of the final report draft will focus on the recommendation and implementation portion of the transportation plan program. Transportation projects that will be recommended for the short-term and long-range needs will be developed based on the TAC's recommendations and concurrence.

The study process allows for the solicitation of input from the public at two TAC workshops. This public participation element is included in the study process to ensure that any decisions made regarding this study are acceptable to the community.

The first TAC workshop provides an inventory and analysis of existing conditions and identification of needed transportation improvements. The second TAC workshop will focus on prioritization of projects, estimation of project costs, and discussion of the funding process.

The TAC is expected to recommend those comments that are to be incorporated into the report and applicable to the goals of this study. The final report draft will be submitted to the City for review and comments.

Upon local review of the draft report, UDOT will make appropriate changes and submit the final report to the City for approval. The final report will describe the study process, findings and conclusions, and will document the recommended transportation system projects and improvements.

2. Existing Conditions

An inventory and evaluation of existing conditions within the study area was conducted to identify existing transportation problems or issues. The results of the investigation follow.

2.1. Land Use

In order to analyze and forecast traffic volumes, it is essential to understand the land use patterns within the study area. Most of the City is zoned Residential, but there are also issues dealing with commercial and recreational properties. By analyzing the patterns or changes in land use, we can better predict the ever-changing transportation needs.

The Mantua City Zoning map follows in the appendix.

2.2. Environmental

In Utah there are a variety of local environmental issues. Each of the cities and counties need to look at what are the environmental issues in their areas on a case-by-case basis. There are many resources that can help local entities to determine what issues need to be addressed and how any problems that may exist can be resolved.

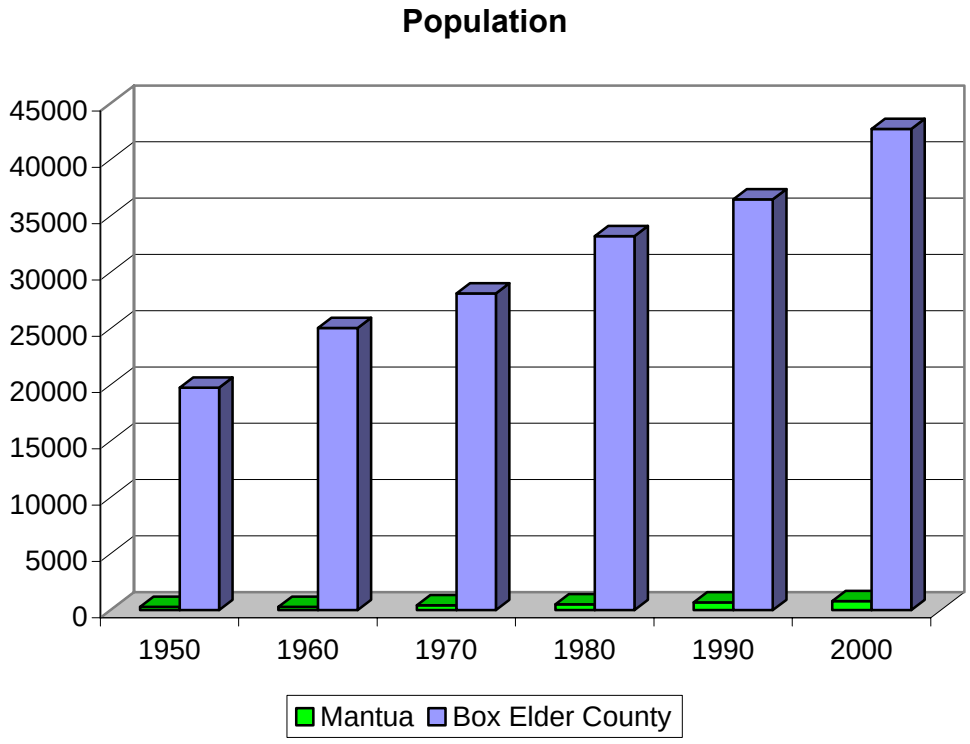
Some of the environmental concerns around the State are wetlands, endangered species, archeological sites, and geological sites among other issues. Environmental concerns should be addressed when looking at an area for any type of improvement to the transportation system. Protecting the environment is a critical part of the transportation planning process.

2.3. Socio-Economic (2000 Census Brief: Cities and Counties of Utah)

Mantua ranks 144th out of 235 incorporated cities and towns for population in the state of Utah. Historical growth rates have been identified for this study, because past growth is usually a good indicator of what might occur in the future. Chart 2-1 identifies the population growth over the past 50 years for the State of Utah, Box Elder County and Mantua. Chart 2-2 identifies that population change in Mantua has ranged from 1.48% between 1950 and 1960 to 50.18% between 1960 and 1970. Growth in the State has gained between 18 and 38 percent each decade during the past 50 years.

Chart 2-1 Population

Year	Utah	Box Elder County	Mantua
1950	688,862	19,734	271
1960	890,627	25,061	275
1970	1,059,273	28,129	413
1980	1,461,037	33,222	484
1990	1,722,850	36,485	665
2000	2,233,169	42,745	791



Source: U.S. Bureau of the Census
Governor's Office of Planning and Budget
http://www.governor.utah.gov/dea

Chart 2-3 identifies yearly population growth rates for the State of Utah and Box Elder County.

As the State population has grown every decade from 1950 until 2000, Box Elder County has shown variable growth in the same time period.

Mantua has some unique demographic characteristics when compared with the State, particularly with age demographics. In the 25 to 54-age category, the State is at 38.6% the County is at 35.7% and the City is at 36.1%. For the 65+-age category, the state is at 8.5%, the county is at 10.4% and the City is at 8.3%. The State's median age is 27.1 years; the County's median age is 28.0 years; the City's median age is 29.8 years. Another interesting statistic is that of Veteran status with State at 10.7%, the County 11.4% and Mantua at 13.8%.

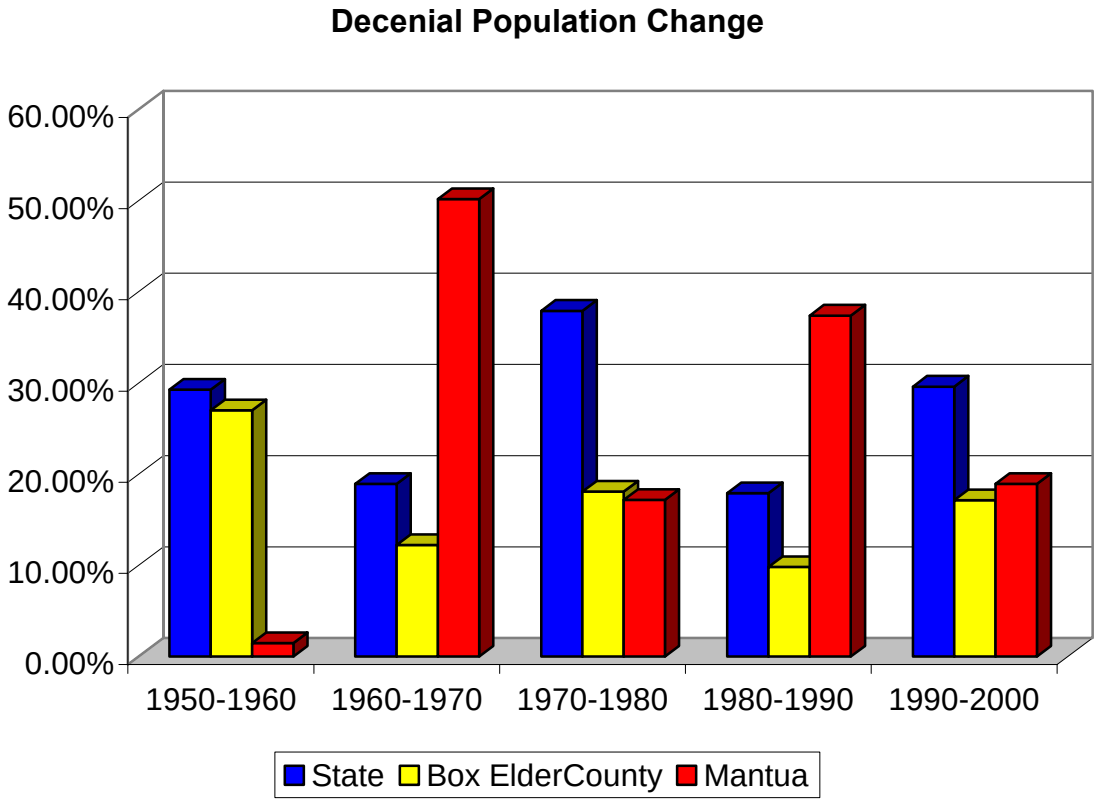
The 2000 median household income in Mantua is $60,234, compared to the State median household income of $45,726.

The unemployment rate in Mantua was 3.9 percent in 2000. According to the Utah Department of Employment Security (UDES), in 2000 there were approximately 342 employed people in Mantua, or 65.9% of the population. The City had 20 unemployed people, which is 3.9% of the population. There are 18,298 employed people in Box Elder County, or 62.5% of the population. The County has 1,013 people unemployed, which is 3.5% of the population.

The majority of employees in Box Elder County work in four primary employment sectors: Manufacturing, Government and Trade, as shown in the following charts. In the County, these sectors make up 87.40% of the labor force. Another interesting note was that housing built from 1990-2000 was 16.7% of the total for Mantua compared to 25% for the State. Also, homes built before 1939 were 29.5% of the total for Mantua with 10% for the State.

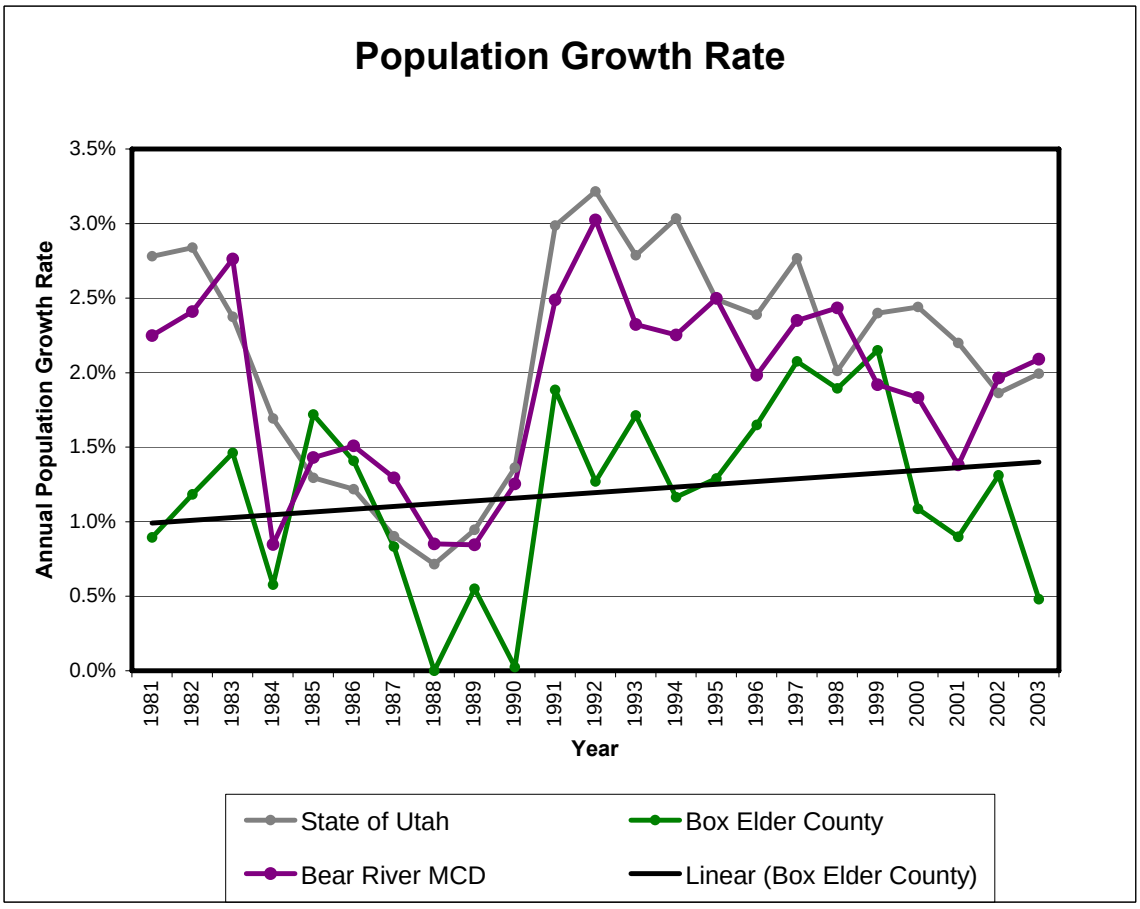
Chart 2-2. Population Change

Decade	Utah	Box Elder County	Mantua
1950-1960	29.29%	26.99%	1.48%
1960-1970	18.94%	12.24%	50.18%
1970-1980	37.93%	18.11%	17.19%
1980-1990	17.92%	9.82%	37.40%
1990-2000	29.62%	17.16%	18.95%



Source: U.S. Bureau of the Census
Governor's Office of Planning and Budget
http://www.governor.utah.gov/dea

Chart 2-3. Population Growth Rate (1980-2000)

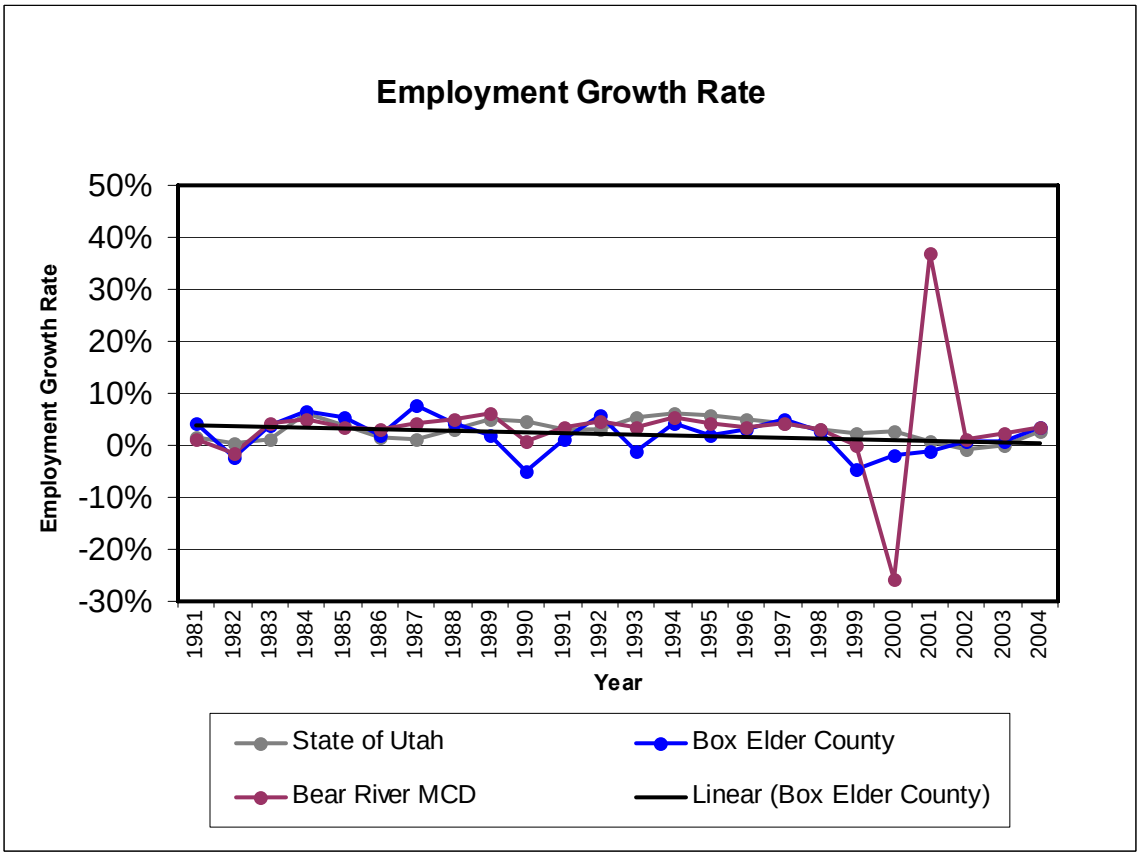


MCD = Multi-County District

Bear River MCD = Box Elder, Cache, and Rich Counties

Source: Governors Office of Planning and Budget
http://www.governor.utah.gov/dea

Chart 2-4. Employment Growth Rate (1980-2000)



MCD = Multi-County District

Bear River MCD = Box Elder, Cache, and Rich Counties

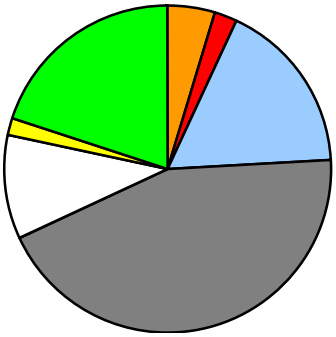
Source: Governors Office of Planning and Budget
http://www.governor.utah.gov/dea

Chart 2-5. Box Elder County Employment Occupation Sectors (1980-2000)

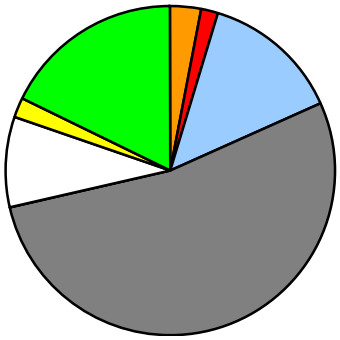
	Sector	1980	1990	2000	Δ% 1980-2000
	Construction	4.68%	3.05%	5.47%	79.52%
	FIRE	2.24%	1.72%	2.15%	46.92%
	Government	17.58%	13.79%	13.50%	17.86%
	Manufacturing	44.35%	53.27%	43.96%	52.15%
	Mining	0.07%	0.09%	0.18%	300.00%
	Services	10.54%	9.00%	11.82%	72.09%
	TCPU	1.68%	1.93%	2.45%	123.59%
	Trade	20.22%	17.88%	21.12%	60.32%

FIRE = Finance, Insurance & Real Estate
TCPU = Telecommunications & Public Utilities

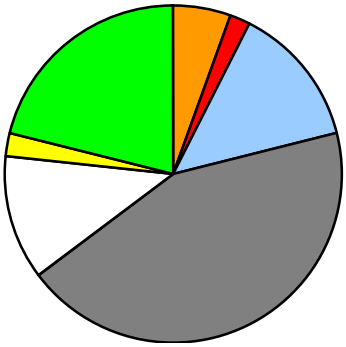
1980 Employment Sectors



1990 Employment Sectors



2000 Employment Sectors



Source: Governors Office of Planning and Budget
http://www.governor.utah.gov/dea

2.4. Functional Street Classification

This document identifies the current functional characteristics of the federal aid roadway network of Mantua. Functional street classification is a subjective means to identify how a roadway functions when a combination of the roadway's characteristics are evaluated. These characteristics include: roadway configuration, right-of-way, traffic volume, carrying capacity, property access, speed limit, roadway spacing, and length of trips using the roadway.

The primary functional classifications used in categorizing selected roadways of Mantua are: Interstate and Collector. An Arterial's function is to provide traffic mobility at higher speeds with limited property access. Traffic from the local roads is gathered by the Collector system, which provides a balance between mobility and property access trips. Local streets and roads serve property access based trips and these trips are generally shorter in length.

The Mantua area is accessed by US-91 from the north and south, which runs the entire length of the City. Mantua is accessed from the north by US-91, which eventually connects to I-15 to the West. I-15 extends southward toward the Wasatch Front, Salt Lake City area, at a distance of 65 miles. I-15 extends northward toward the Tremonton area, at a distance of 27 miles.

2.5. Bridges

There is one bridge on the state system in the study area at the US-91/Mantua Interchange that could be eligible for federal bridge maintenance, rehabilitation, or replacement funds. At the present this bridge has a Sufficiency Rating of 83.9. Bridges are maintained and minor repairs made with maintenance funds. A bridge is rehabilitated or replaced as it deteriorates over time and as traffic volumes increase.

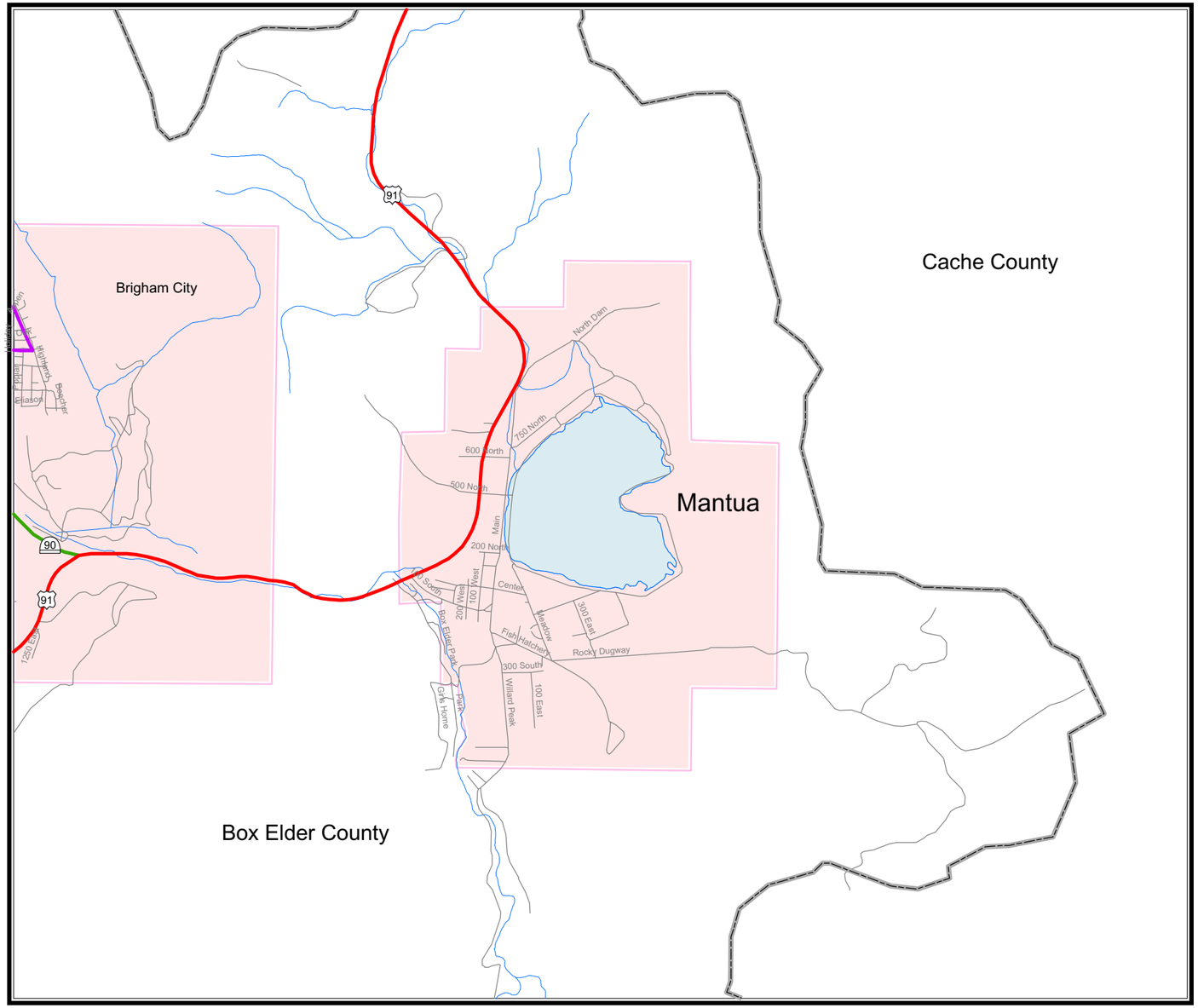
Figure 2-3 Bridge Sufficiency Rating

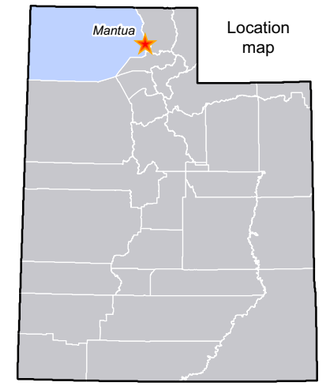
Table 2-1 compares the bridges in the study area and identifies their sufficiency ratings and locations. Sufficiency rating indicates current condition of the structure with a rating of 100 showing a structure that is in excellent shape. A rating nearing 50 will reveal a structure that is in need of attention and is eligible for federal funding.

Table 2-1 – Bridge Sufficiency Ratings

Bridge Number	State Rte	Location	Sufficiency Rating
OF 578	91	Mantua Interchange	83.9

Figure 2-1. Functional Classification Map



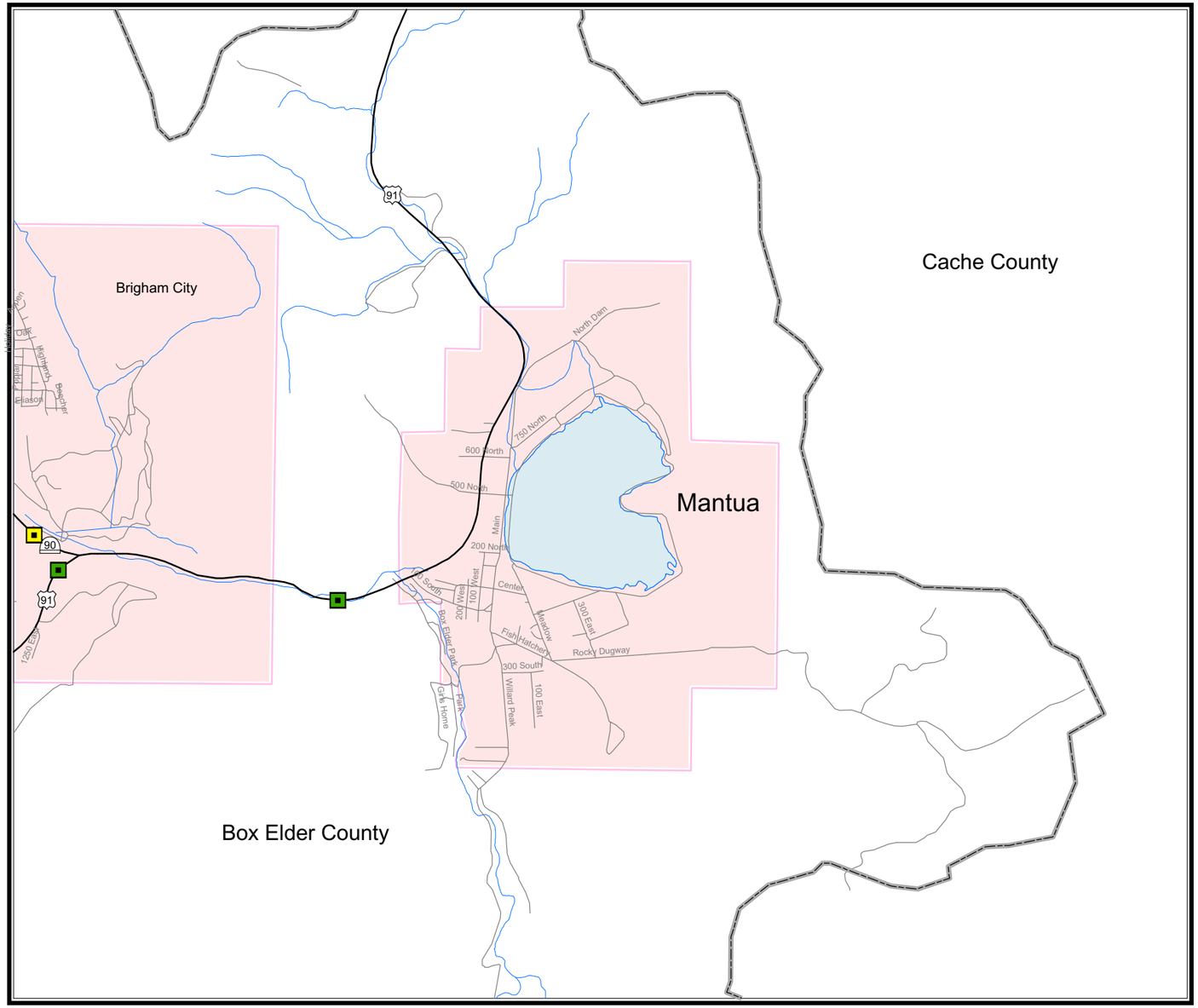


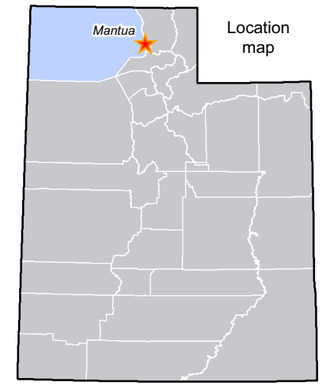
Functional Class

- Interstate
- Freeway Expressway
- Other Principal Arterial
- Minor Arterial
- Collector
- Minor Collector
- Local
- Other Roads
- City Boundaries

NOTE: Proprosed Routes are indicated by dashed line.

Figure 2-2. Bridge Sufficiency Map





Bridges

Funding

- Eligible for Replacement Funds
- Eligible for Rehabilitation Funds
- Maintenance Funds Only
- StateRoads
- Other Roads
- Railroad
- City Boundaries

2.6. Traffic Counts

Recent average daily traffic count data were obtained from UDOT. Table 2-2 shows the traffic count data on the key state roadways of the study area. The number of vehicles in both directions that pass over a given segment of roadway in a 24-hour period is referred to as the average annual daily traffic (AADT) for that segment.

Table 2-2 Average Daily Traffic

Road	Segment	Year	AADT
91	West Incorporated Limits Mantua	2004	15,450
91	North Incorporated Limits Mantua	2004	16,220

Charts 2-6, 2-7, and 2-8 illustrate the average daily traffic variation on state facilities near the study area by Month, Day, and Hour:

A map illustrating existing and future traffic, peak season traffic, and roadway capacities is presented in the Traffic Forecast section 3.2.

2.7. Traffic Accidents

Traffic accident data was obtained from UDOT's database of reported accidents from 2004. Table 2-3 summarizes the accident statistics for those segments for the year 2004. Additional information includes the average daily traffic, the number of reported accidents, and the accident rates. The roadway segment accident rates were determined in terms of accidents per million vehicle miles traveled. The crash rates for each roadway segment are compared to the expected crash rate for similar facilities across the state.

Upon review of the accident data for the state system in the area, there appears to be higher than expected accident rates at the following locations:

- On SR-91 from mile post 7.98 to mile post 10.44 (Mantua North limits to the Box Elder / Cache County Line)

The remainder of the state system within the study area shows a lower than expected accident rate.

Figure 2-4 shows the safety index, which incorporates crash data taken from 2002-2004 for each of the various segments of the state highway system in the study area.

The safety index is a composite of number of accidents, daily traffic, and the severity for each state highway segment.

Mantua may wish to review the accident history for the local street system to identify any specific accident hot spot locations.

Chart 2-6 Monthly ADT

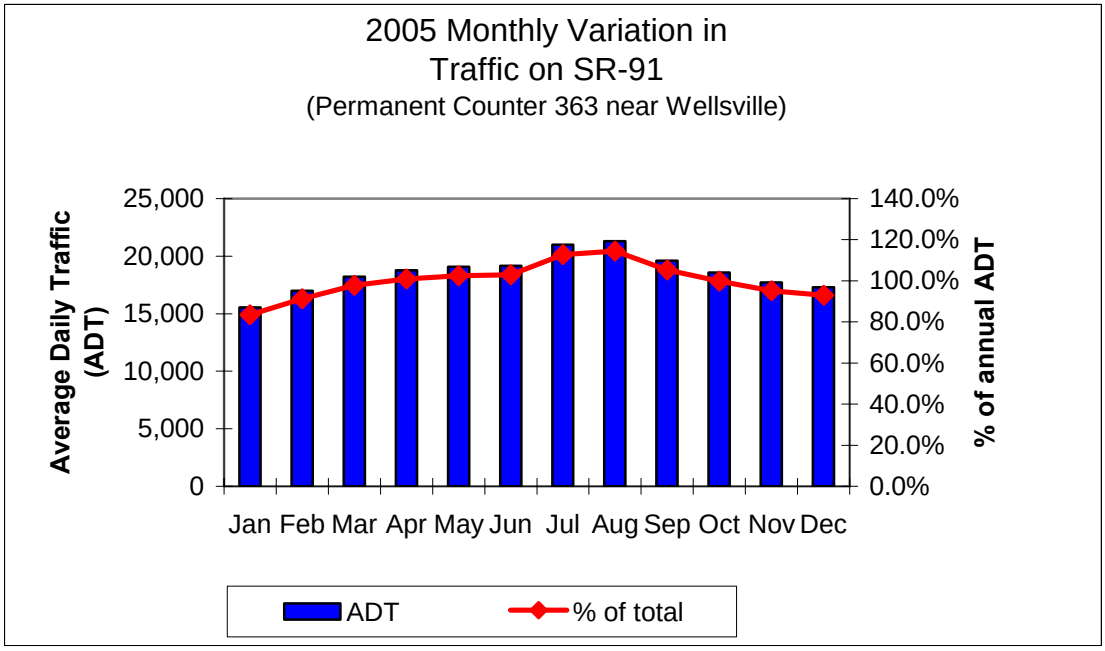


Chart 2-7 Daily ADT

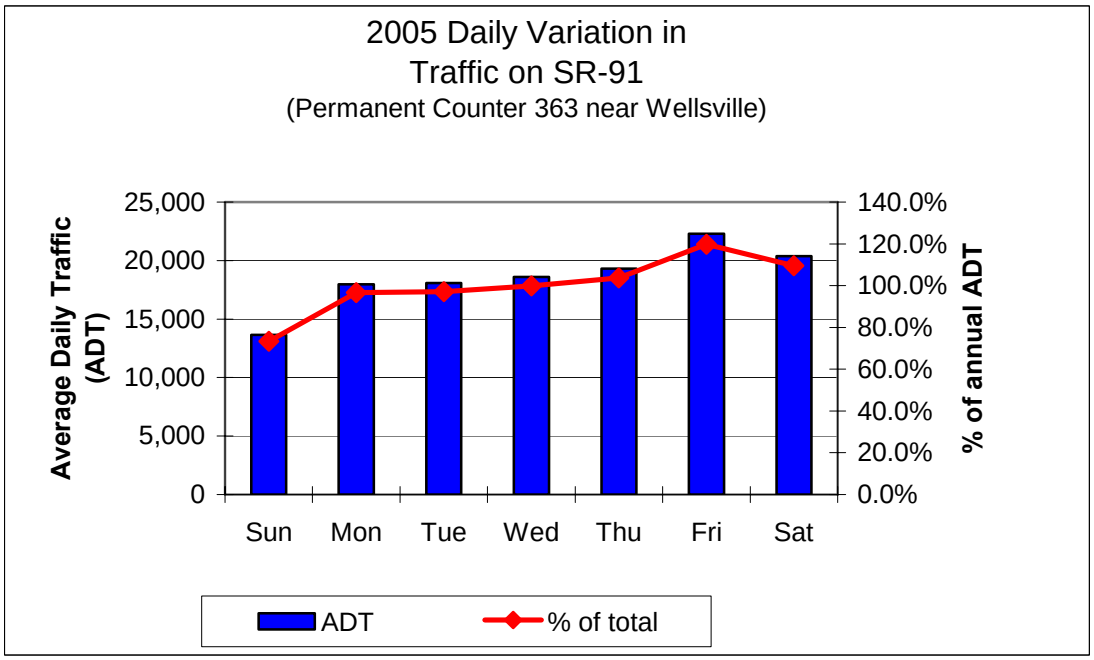


Chart 2-8 Hourly ADT

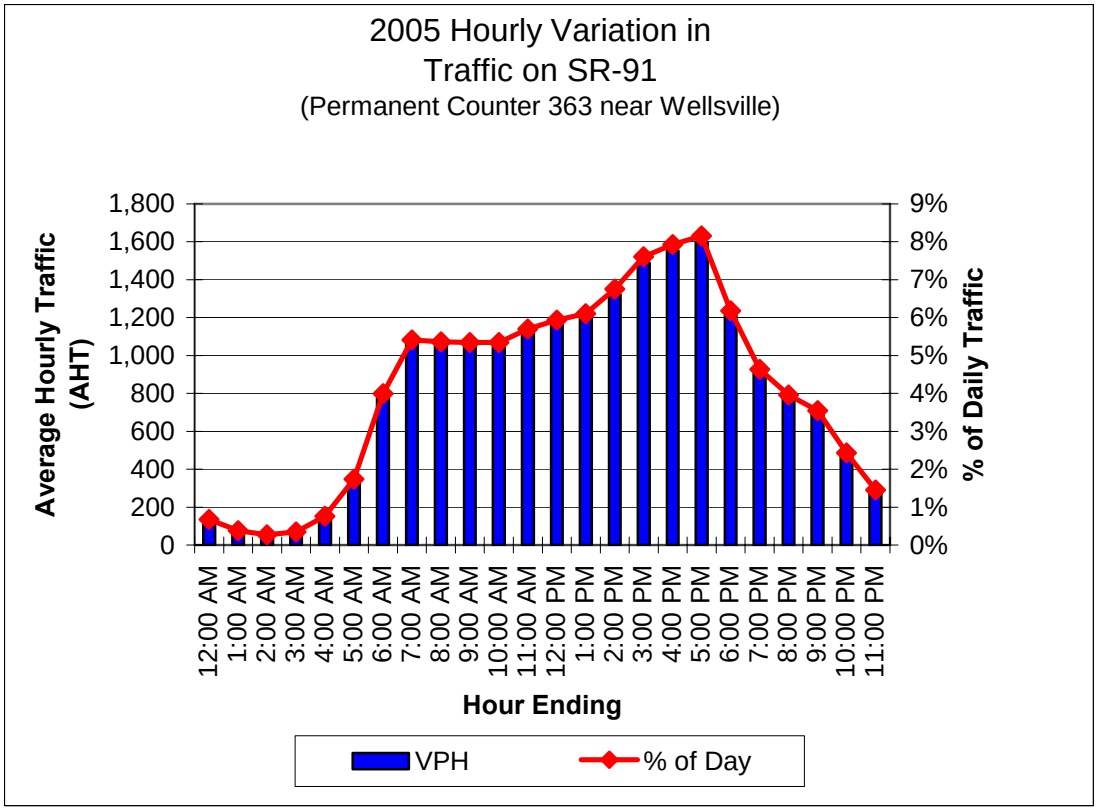


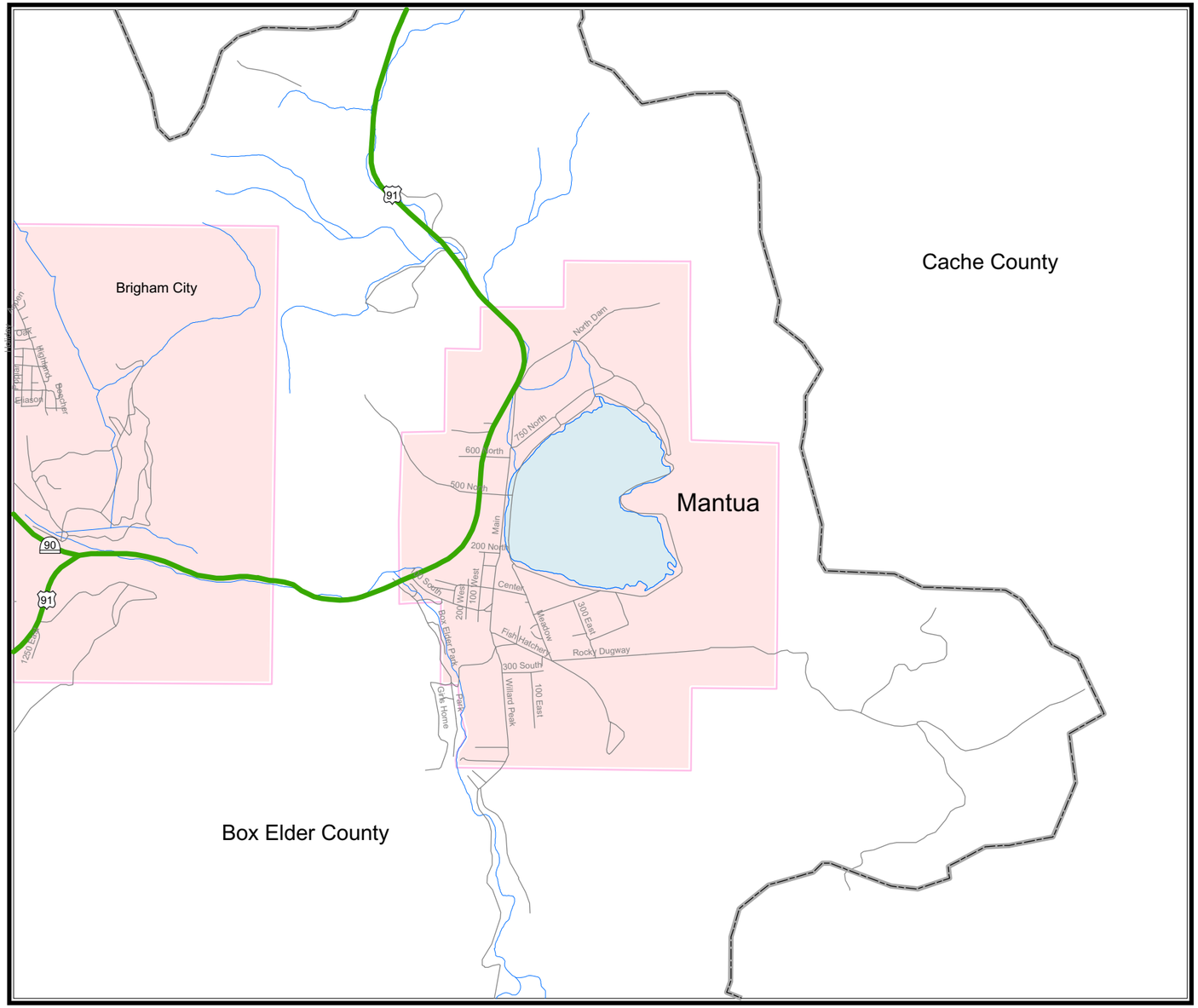
Table 2-3. Crash Data 2004

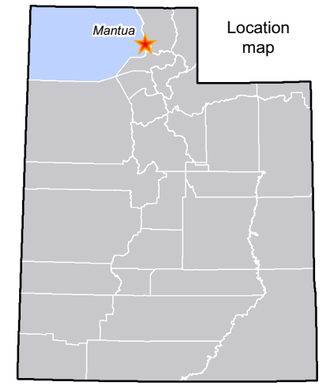
Road	From Milepost	End Milepost	ADT (2004)	# Crashes (2004)	Crash Rate **	
					Actual	Expected*
91	4.13	5.91	18,020	14*	1.32	1.64
91	5.91	7.98	15,450	15	1.02	1.64
91	7.98	10.44	16,220	31	2.33	1.64
91	10.44	16.97	15,480	45	1.35	1.64

* One Fatal accident

** Statewide average accident rates for functional class and volume group.
** Accident rates are per million vehicle miles traveled
Red indicates higher than expected rates of accidents

Figure 2-3.State Road Safety Index





State Roads

Safety Index Group

- Low
- Medium
- High
- Other Roads
- Water Courses
- City Boundaries

2.8. Bicycle and Pedestrian

The Federal Highway Administration recognizes the increasingly important role of bicycling and walking in creating a balanced, intermodal transportation system, and encourages state and local governments to incorporate all necessary provisions to accommodate bicycle and pedestrian traffic. In following this directive, Mantua is encouraged to adopt a "complete streets" philosophy that allows for the advancement of a transportation system for both motorized and non-motorized travel.

2.8.1. Biking/Trails

The Town of Mantua does not have any designated bike lanes, and as yet there has not been a need. Most of the Town's streets have adequate shoulder, however the majority of bicyclists ride in the travel lane due to the debris often found along the shoulder due to the lack of curb and gutter. Although Mantua does not own a street sweeper, the maintenance division rents a sweeper twice a year, once in the early spring and again before the Town's celebration in July, in an attempt to keep the shoulders clear of debris. The typical on-street cyclist in Mantua is a resident, as not many touring cyclists frequent the area.

US-91 leading into Mantua Town has an adequate amount of shoulder that would accommodate bicyclists, but also includes high volume, high speed vehicular traffic and rumble strip placements.

There are mountain biking opportunities close to Mantua, such as at Ben Lomond and Willard Peak. Although mountain biking enthusiasts can enjoy these pristine destinations, the roads that access them carry a high number of motor vehicles, which oftentimes discourages cyclists from choosing these destination points. The community also enjoys the nearby Bonneville Shoreline trail that is open to biking, hiking, and equestrian use.

Within the Town of Mantua off-highway-vehicle (OHV) use is a popular activity. The Town is unique in that they allow OHV use on local streets. These riders must be licensed operators and speed limits must be less than 20 mph. Those that desire to ride their OHV on the town roads are required to purchase a sticker, which allows the Town to keep track of the riders and inform them of new OHV requirements.

2.8.2. Pedestrians

Much of the outlying area of Mantua does not include sidewalks and the road shoulder handles most pedestrian traffic. There are a few sidewalks in the downtown area that accommodate pedestrian travel.

2.9. Public Transportation

There is no public transportation currently serving Mantua. The nearest such service is provided by the Utah Transit Authority between Brigham City and Ogden. Intercity public transportation is provided by Greyhound in both Ogden and Salt Lake City, and by Amtrak in Salt Lake City.

2.10. Freight

Freight transportation is not a major factor in Mantua. Aside from trucks passing around the community en route to and from the Cache Valley on US 89/91, only limited local deliveries are made in Mantua itself. There are no freight-generating industries located in Mantua.

2.11. Aviation Facilities & Operations

There is no airport in Mantua, with the nearest aviation facilities being located in Brigham City. The nearest commercial airline service is provided at the Salt Lake City International Airport. Information on the Box Elder County Airport in Brigham City can be obtained by referencing the Brigham City CTP document from June of 2004.

2.12.1. State Class B and C Program

The distribution of Class B and C Program monies is established by state legislation and is administered by the State Department of Transportation. Revenues for the program are derived from State fuel taxes, registration fees, driver license fees, inspection fees, and transportation permits. Twenty-five percent of the funds derived from the taxes and fees are distributed to cities and counties for construction and maintenance programs.

Class B and C funds are allocated to each City and county by the following formula: 50% based on the population ratio of the local jurisdiction with the population of the State, 50% based on the ratio that the Class B roads weighted mileage within each county and the class C roads weighted mileage within each municipality bear to the total class B and Class C roads weighted mileage within the state. Weighted means the sum of the following: (i) paved roads multiplied by five; (ii) graveled road miles multiplied by two; and (iii) all other road types multiplied by one. (Utah Code 72-2-108) For more information go to UDOT's homepage @ www.udot.utah.gov, tab on "Doing Business" select the tab for "Local Government Assistance" here you will find the Regulations governing Class B&C funds.

The table below identifies the ratio used to determine the amount of B and C funds allocated.

Class B and C funds can be used for maintenance and construction of highways, however thirty percent of the funds must be used for construction or maintenance projects that exceed $40,000. Class B and C funds can also be used for matching federal funds or to pay the principal, interest, premiums, and reserves issued for bonds.

Mantua received $37,922.39 in fiscal year 2005 for its Class C fund allocation.

Apportionment Method of Class B and C Funds

2.12.2 Federal Funds

Based on	Of
50%	Roadway Mileage *Based on Surface Type Classification (Weighted Measure) Paved Road (X 5) Graveled Road (X 2) Other Road (X 1)
50%	Total Population

There are federal monies that are available to cities and counties through federal-aid programs. The funds are administered by the Utah Department of Transportation. In order to be eligible, a project must be listed on the five-year Statewide Transportation Improvement Program (STIP).

The Surface Transportation Program (STP) provides funding for any road that is functionally classified as a collector street or higher. STP funds can be used for a range of projects including rehabilitation and new construction. The Joint Highway Committee programs a portion of the STP funds for projects around the State for urban areas. A portion of the STP funds can be used in any area of the State, at the discretion of the State Transportation Commission.

Transportation Enhancement funds are allocated based on a competitive application process. The Transportation Enhancement Advisory Committee reviews the applications and then a portion of those are recommended to the State Transportation Commission for funding. Transportation enhancements include 12 categories ranging from historic preservation, to bicycle and pedestrian facilities, to water runoff mitigation. Other funds that are available are State Trails Funds, administered by the Division of Wildlife Resources.

The amount of money available for projects specifically in the study area varies each year depending on the planned projects in UDOT's Region One. As a result, federal aid program monies are not listed as part of the study area's transportation revenue.

2.12.3 Local Funds

Mantua, like most cities, has utilized general fund revenues in its transportation program.

Other options available to improve the City's transportation facilities could involve some type of bonding arrangement, either through the creation of a redevelopment district or a special improvement district. These districts are organized for the purpose of funding a single, specific project that benefits an identifiable group of properties. Another source of funding is through general obligation bonding arrangements for projects felt to be beneficial to the entire entity issuing the bonds.

2.12.4 Private Sources

Private interests often provide alternative funding for transportation improvements. Developers construct the local streets within the subdivisions and often dedicate right-of-way and participate in the construction of collector or arterial streets adjacent to their developments. Developers can be considered as an alternative source of funds for projects because of the impacts of the development, such as the need for traffic signals or street widening. Developers should be expected to mitigate certain impacts resulting from their developments. The need for improvements, such as traffic signals or street widening can be mitigated through direct construction or impact fees.

3. Future Conditions

3.1. Land Use and Growth

Mantua's Community Transportation Plan must be responsive to the current and future needs of the area. The area's growth potential must be estimated and incorporated in the evaluation and analysis of future transportation needs. Future needs analysis considers;

- Forecasting future population, employment, and land use;
- Forecasting roadway travel volumes and area traffic demands;
- Evaluating transportation system level impacts;
- Documenting transportation system needs; and
- Identifying mitigation and/or improvements to meet those needs.

This chapter summarizes the population, employment, and land use projections developed for the project study area. Future traffic volumes for the major roadway segments are based on projections utilizing 20 years of traffic count history. The forecasted traffic data are then used to identify future deficiencies in the transportation system.

3.1.1. Population and Employment Forecasts

The Utah Governor's Office of Planning and Budget develop population and employment projections. The current population and employment levels, as well as the future projections for each are shown for Mantua and Box Elder County in the following table.

Table 3-1 Current and Future Population and Employment

Year	Mantua City	Box Elder County	
	Population	Population	Employment
2000	791	42,745	23,854
2030	1,370	68,088	38,750

3.1.2 Future Land Use

The City has an annexation plan that describes where it ideally plans to grow. Several areas for future development were discussed during the course of the Community Transportation Plan. Updated Land Use documents can be found in the Mantua General Plan.

While specific development plans change with time, it is important to note possible areas of development within the Mantua area. Vehicle mix associated with develop increases should be examined, especially those related to commercial and industrial growth. Specific vehicle size needs should be understood.

3.2. Traffic Forecast

Traffic forecasts in the rural areas of Utah are based on historic traffic volumes from the previous 20 years, with a straight-line forecast to estimate future traffic volumes.

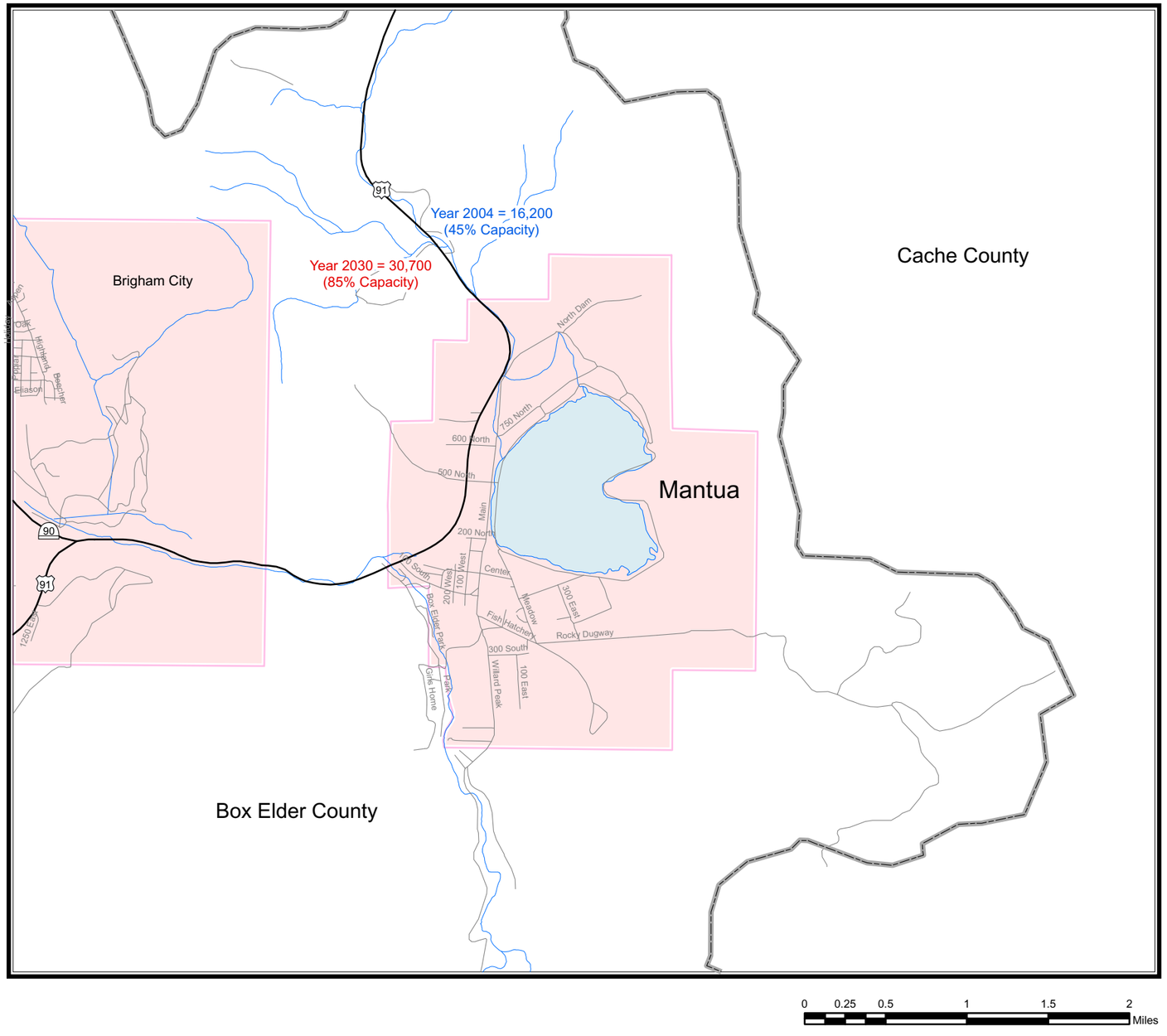
The forecasts are then inserted into the database for analysis and display.

A traffic forecast summary sheet can be found in the appendix of this document.

In Mantua City, traffic volumes have increased 1% to 7% a year, with population growing at similar rates.

Figure 3-1 shows average annual daily traffic for years 2004 and 2030. Also shown is the percentage of the roadway capacity the traffic will reach. The map illustrates that no corridors, within the study area, should have capacity issues by the year 2030 if historical trends continue.

Figure 3-1. Average Annual Daily Traffic yr. 2004; yr. 2030



4. Transportation Improvement Projects

4.1. Current State Transportation Improvement Program (2006-2010 STIP)

At the present time there are no state sponsored STIP or Long Range Plan projects in the Mantua area.

Regularly scheduled highway maintenance activities will however continue as expected.

4.2. Recommended Projects

The following list identifies the five projects that have been identified as having the highest priority to the Mantua Transportation Advisory Committee. These needs/issues were identified through a series of two meetings where the TAC identified the needs and set priorities for projects.

- **Main Street Improvements**
- **Intersection improvement at 600 North & SR-91 (NB Turn Lane)**
- **100 South Improvements**
- **Advanced "Ice Warning Sign" at MP 5.3 on SR-91**
- **New Road (300 South): Willard Road from 200 West**

Additionally, many concerns, issues and potential projects were also identified which are found on the attached community issues list.

4.3. Revenue Summary

4.3.1. Federal and State Participation

Federal and State participation is important for the success of implementing these projects. UDOT needs to see the Community Transportation Plan so that they understand what the City wants to do with its transportation system. UDOT can then weigh the priorities of the city against the rest of the state. It is important for Mantua to promote projects that can be placed on UDOT's five-year Statewide Transportation Improvement Program (STIP) as soon as possible. The process for placing projects into the STIP and funding of these projects can be found at UDOT's homepage @ www.udot.utah.gov, tab on "Doing Business" select the tab for " Planning and Programming" here there is a subtopic entitled "Statewide Transportation Improvement Program (STIP)" that describes this program in detail. Additionally,

coordination with UDOT's Region Director and Engineer for Planning will be practical.

4.3.2. City Participation

The City will fund the local Mantua projects. The local match component and partnering opportunities vary by the funding source.

4.4. Other Potential Funding

Previous sections of this chapter show the potential for significant shortfalls in funding projected for the short-range and long-range programs. The following options may be available to help offset all or part of the anticipated shortfalls:

- Increased transportation impact fees.
- Increased general fund allocation to transportation projects.
- General obligation bonds repaid with property tax levies.
- Increased participation by developers, including cooperative programs and incentives.
- Special improvement districts (SIDs), whereby adjacent property owners are assessed portions of the project cost.
- Sales or other tax increase.
- State funding for improvements on the county roadway system.
- Increased gas tax, which would have to be approved by the State Legislature.
- Federal-aid available under one of the programs provided in the federal transportation bill (SAFETEA-LU is the current bill).

Increased general fund allocation means that General Funds must be diverted from other governmental services and/or programs. General obligation bonds provide initial capital for transportation improvement projects but add to the debt service of the governmental agency. One way to avoid increased taxes needed to retire the debt is to sell bonds repaid with a portion of the municipalities' State Class monies for a certain number of years.

Participation by private developers provides a promising funding mechanism for new projects. Developers can contribute to transportation projects by constructing on-site improvements along their site frontage and by paying development fees. Municipalities commonly require developers to dedicate right-of-way and widen streets along the site frontage. A negative side of the on-site improvements is that the streets may be improved in unconnected segments. If there are not several developers adjacent to one another at the same time, a

continuous improved road is not provided. One way to overcome this problem is for the jurisdiction to construct the street and charge the developers their share when they develop their property.

Another way developers can participate is through development fees.

The fees would be based on the additional improvements required to accommodate the new development and would be proportioned among each development. The expenditure of additional funds provided by the fees would be subject to the City's spending limit. However, development fees are often a controversial issue and may or may not be an appropriate method of funding projects.

It is suggested that the transportation element of the city General Plan be updated as frequently as is prudent. Current mapped information as well as a description of the existing and planned future network is necessary to guide development in the area.

Mantua Community Transportation Plan Issues List and Cost Estimates

Revised: Nov. 8, 2006

Location Description	Description of Issue or concern	Issue Category	Possible Action	Planning Level Cost Estimate
100 South: 300 West To Main Street	100 South Improvement (road rehabilitation)	Roadway	Road Rehabilitation Project	$575,000
Brigham City to Mantua	Bike / Pathway Brigham City ~ Mantua City	Bike / Ped	Trail Project	$400,000
SR-91 & MP 0.7 ("The Wall")	Advanced Warning Sign (Icing at "Wall")	Safety	Signing Project	$2,000
SR-91 & Mantua South Interchange	Advanced Warning Sign (Icing @ South Interchange)	Safety	Signing Project	$2,000
SR-91 & 600 North	Advanced Warning Signs @ 600 North	Safety	Signing Project	$1,000
SR-91 & Mantua South Interchange	Snow Plow overspill @ South Interchange	Maintenance	Spot Improvement Project	$10,000
SR-91 & Mantua South Interchange	Debris Flow / rock fall at N.B. exit ramp South Inerchange	Maintenance	Spot Improvement Project	$25,000
SR-91 & 600 North	US 89/91 @ 600 North Intersection NB turn lane & radius repair	Traffic	Turn Lane Project	$30,000
SR-91 & 600 North	US 89/91 @ 600 North Intersection Speed Safety Study	Safety	Speed Study	$1,000
SR-91 & 600 North	US 89/91 & 600 North Crossover Vehicle Underpass	Safety	Bridge Project	$10,000,000
SR-91 & Brigham to Water Tanks Mantua	US 89/91 Crash Study (Midway / water tank / Wall areas)	Safety	Safety Study	$1,000
Main Street & 100 South	Main Street @ 100 South Roundabout	Roadway	Intersection Improvements	$250,000
Main Street & Willard Peak Road	Main Street @ Willard Peak Road - Roundabout	Roadway	Intersection Improvements	$250,000
Fish Hatchery Rd & Meadow Lane	Fish Hatchery Rd @ Meadow Lane - Roundabout	Roadway	Intersection Improvements	$250,000
Main Street: 750 North to Willard Peak Rd.	Main Street Bike / Ped Improvements (Widen shldr / Class II Bike	Bike / Ped	Enhancement Project	$150,000
300 South: Willard Peak Road to 300 West	New Road 300 South @ Willard Road from 200 West	Roadway	New Road	$275,000
South Willard Peak Road: 200 South to C.L.	Improve South Willard Peak Road (in county)	Roadway	Road Widening	$75,000
Fish Hatchery Rd.: from intersection (0.55 mile long)	Fish Hatchery / Rocky Dugway / Meadow Lane Improvement	Roadway	Road Widening	$225,000
Box Elder Campground Road (whole length)	Box Elder Campground Road upgrade	Roadway	Road Widening	$320,000
North Reservoir Area	North Reservoir Area Development	Planning	Planning Study	$50,000
Main Street: 100 South to 750 North	Main Street Program	Enhancement	Enhancement Project	$150,000
Citywide	Impact Fees (Study to Implement)	Planning Study	Planning Study	$50,000
Citywide	Local Financing / Bonding Feasibility	Planning Study	Planning Study	$50,000
Citywide	Enhancement Fund Project Identification	Enhancement	Enhancement Project	$50,000

Total **$13,192,000**

5. Planning Issues, Guidelines, and Other Data

Provided below is a discussion of various issues with a focus on elements that promote a safe and efficient transportation system in the future.

5.1. Guidelines and Policies

These guidelines address certain areas of concern that are applicable to the Mantua Transportation Plan.

5.1.1. Access Management

This section will define and describe some of the aspects of Access Management for roadways and why it is so important. Access Management can make many of the roads in a system work better and operate more safely if properly implemented. There are many benefits to properly implemented access management. Some of the benefits follow:

- Reduction in traffic conflicts and accidents
- Reduced traffic congestion
- Preservation of traffic capacity and level of service
- Improved economic benefits businesses and service agencies
- Potential reductions in air pollution from vehicle exhausts

5.1.1.1. Definition

Access management is the process of comprehensive application of traffic engineering techniques in a manner that seeks to optimize highway system performance in terms of safety, capacity, and speed. Access Management is one tool of many that makes a traffic system work better with what is available.

5.1.1.2. Access Management Techniques

There are many techniques that can be used in access management. The most common techniques are signal spacing, street spacing, access spacing, and interchange to crossroad access spacing. There are various distances for each spacing, dependant upon the roadway type being accessed and the accessing roadway. UDOT has developed an access management program and more information can be gathered from the UDOT website and from the Access Management Program Coordinator.

5.1.1.3. Where to Use Access Management

Access Management can be used on any roadway. In some cases, such as State Highways, access management is a requirement. Access management can be used as an inexpensive way to improve performance on a major roadway that is increasing in volume. Access management should be used on new roadways and roadways that are to be improved so as to prolong the usefulness of the roadway.

5.1.2. Context Sensitive Solutions

Context Sensitive Solutions (CSS) addresses the need, purpose, safety and service of a transportation project, as well as the protection of scenic, aesthetic, historic, environmental and other community values. CSS is an approach to transportation solutions that find, recognize and incorporate issues/factors that are part of the larger context such as the physical, social, economic, political and cultural impacts. When this approach is used in a project the project become better for all of the entities involved.

5.1.3. Recommended Roadway Cross Sections

Cross sections are the combination of the individual design elements that constitute the design of the roadway. Cross section elements include the pavement surface for driving and parking lanes, curb and gutter, sidewalks and additional buffer/landscape areas. Right-of-way is the total land area needed to provide for the cross section elements.

The design of the individual roadway elements depends on the intended use of the facility. Roads with higher design volumes and speeds need more travel lanes and wider right-of-way than low volume, low speed roads. The high use roadway type should include wider shoulders and medians, separate turn lanes, dedicated bicycle lanes, elimination of on street parking, and control of driveway access.

For most roadways, an additional buffer area is provided beyond the curb line. This buffer area accommodates the sidewalk area, landscaping, and local utilities. Locating the utilities outside the traveled way minimizes traffic disruption in utility repairs or changes in service are needed.

Federal Highway standard widths apply on the all roads that are part of the state highway system. Also, all federally funded roadways in Mantua and Toeele County must adhere to the same standards for widths and design.

5.2. Bicycles and Pedestrians

5.2.1. Bicycles/Trails

Bicycles are allowed on all roadways, except where legally prohibited, and as such should be a consideration on all roads that are being designed and constructed, and as roadway improvements are taking place. To increase the level of interest in bicycling in Mantua, as growth occurs developers should be encouraged to include separate bicycle/pedestrian pathways in new developments. Opportunities to increase shoulder width in conjunction with a roadway project should be taken whenever technically, environmentally, and financially feasible. As referenced in Chapter 2 of this Plan, the City is actively seeking funding to develop a trails system. When such a plan is established, it will be important to note that regardless of the trails system's function, as all bike/trail facilities are planned, designed and constructed, a review of the connectivity

of the trails system is critical. With input from the community, connectivity of the trails should play an integral role in the decision making process for potential projects. In order to enhance the quality of life for those in the community, the trails should be accessible to all users and incorporate ADA requirements.

The trails, when constructed, may have slight variances in application type due to possible differences in the terrain at a specific trail location or differing user needs. However, regardless of the design type, the applicable design standards found in the latest version of the AASHTO Guide for the Development of Bicycle Facilities should be followed, as well as the Manual on Uniform Traffic Control Devices (MUTCD) guidelines for appropriate signage of the trails system.

5.2.2 Pedestrians

Every effort should be made to accommodate pedestrians in Mantua. The City should expand on the sidewalks already in place in the downtown area. A good first step is the requirement that developers must include sidewalk in all new development plans. An opportunity to include accessible sidewalks, while adhering to ADA requirements, during construction of other projects is encouraged. When constructing a sidewalk, for the safety and convenience of pedestrian traffic, placement should be free from debris and obstructions or impediments such as utility poles, trees, bushes, etc. The interconnectedness of the City's sidewalk system should be considered as development takes place.

Sidewalks in residential areas should be at least 5-feet wide whenever adequate right-of-way can be secured. This will provide sufficient room and a level of comfort to persons walking in pairs or passing and will specifically allow for persons with strollers or in wheelchairs to pass. On major roadways, sidewalks at least 6-feet wide and with a 6 to 10-foot park strip are desirable. In pedestrian-focused areas, such as schools, parks, sports venues or theaters, and in hotel and market districts, even wider sidewalks are recommended to accommodate and encourage a higher level of pedestrian activity, especially where tourist use would be expected. To ensure consistency of sidewalks throughout the area, UDOT's approved standard for sidewalks should be followed.

There may be opportunity for Mantua City to begin a sidewalk placement plan through the Utah Department of Transportation's Safe Sidewalk Program, available through the Traffic and Safety Division. The City should contact UDOT's Region 2 office in Salt Lake City for application requirements.

If schools are to be constructed within Mantua, awareness of the requirement to develop a routing plan in cooperation with the area school is paramount. The routing plan is to be reviewed and updated annually.

Information regarding the Safe Routes to School program is available by contacting the Utah Department of Transportation's Traffic and Safety Division.

5.3. Enhancement Program

In 1991, the Intermodal Surface Transportation Efficiency Act (ISTEA) created the Transportation Enhancement program. The program has since been reauthorized in subsequent bills (i.e. TEA-21). The Transportation Enhancement program provides opportunities to use federal dollars to enhance the cultural and environmental value of the transportation system. These transportation enhancements are defined as follows by SAFETEA-LU:

The term 'transportation enhancement activities' means, with respect to any project or the area to be served by the project, any of the following activities if such activity relates to surface transportation: provision of facilities for pedestrians and bicycles, provision of safety and educational activities for pedestrians and bicyclists, acquisition of scenic easements and scenic or historic sites, scenic of historic highway programs (including the provision of tourist and welcome center facilities), landscaping and other scenic beautification, historic preservation, rehabilitation and operation of historic transportation buildings, structures, or facilities (including historic railroad facilities and canals), preservation of abandoned railway corridors (including the conservation and use thereof for pedestrian or bicycle trails), control and removal of outdoor advertising, archeological planning and research, environmental mitigation to address water pollution due to highway runoff or reduce vehicle caused wildlife mortality while maintaining habitat connectivity, and establishment of transportation museums.

The Utah Transportation Commission, with the help of an advisory committee, decides which projects will be programmed and placed on the Statewide Transportation Improvement Program (STIP). Applications are accepted in an annual cycle for the limited funds available to UDOT for such projects. Information and Applications for the current cycle can be found on UDOT's homepage @ www.udot.utah.gov, tab on "Doing Business" select "Planning and Programming", here you will find a sub-topic entitled "Transportation Enhancement Program". The UDOT Program Development Office, on or before the specified date to be considered, must receive applications. Projects will compete on a statewide basis.

5.4. Transportation Corridor Preservation

Transportation Corridor Preservation will be introduced as a method of helping Mantua's Community Transportation Plan. This section will define what Corridor Preservation is and ways to use it to help the Community Transportation Plan succeed for the Town.

5.4.1. Definition

Transportation Corridor Preservation is the reserving of land for use in building roadways that will function now and can be expanded at a later date. It is a planning tool that will reduce future hardships on the public and the town. The land along the corridor is protected for building the roadway and maintaining the right-of-way for future expansion by a variety of methods, some of which will be discussed here.

5.4.2. Corridor Preservation Techniques

There are three main ways that a transportation corridor can be preserved. The three ways are acquisition, police powers, and voluntary agreements and government inducements. Under each of these are many sub-categories. The main methods will be discussed here, with a listing of some of the sub-categories.

5.4.2.1. Acquisition

One way to preserve a transportation corridor is to acquire the property outright. The property acquired can be developed or undeveloped. When the town is able to acquire undeveloped property, the town has the ability to build without greatly impacting the public. On the other hand, acquiring developed land can be very expensive and can create a negative image for the Town. Acquisition of land should be the last resort in any of the cases for Transportation Corridor Preservation. The following is a list of some ways that land can be acquired.

- Development Easements
- Public Land Exchanges
- Private Land Trusts
- Advance Purchase and Eminent Domain
- Hardship Acquisition
- Purchase Options

5.4.2.2. Exercise of Police Powers

Police powers are those ordinances that are enacted by a municipality in order to control some of the aspects of the community. There are ordinances that can be helpful in preserving corridors for the Community Transportation Plan. Many of the ordinances that can be used for corridor preservation are for future developments in the community. These can be controversial, but can be initially less intrusive.

- Impact Fees and Exactions
- Setback Ordinances
- Official Maps or Maps of Reservation
- Adequate Public Facilities and Concurrency Requirements

5.4.2.3. Voluntary Agreements and Governmental Inducements

Voluntary agreements and governmental inducements rely on the good will of both the developers and the municipality. Many times it is a give and take situation where both parties could benefit in the end. The developer will likely have a better-developed area and the municipality will be able to preserve the corridor for transportation in

and around the development. Listed below are some of the voluntary agreements and governmental inducements that can be used in order to preserve transportation corridors in the city limits.

- Voluntary Platting
- Transfer of Development Rights
- Tax Abatement
- Agricultural Zoning

Each of these methods has its place, but there is an order that any government should try to use. Voluntary agreements and government inducements should be used, if possible, before any police powers are used. Police powers should be tried before acquisition is sought. UDOT has developed a toolkit to aid in corridor preservation techniques. This toolkit contains references to Utah code and examples of how the techniques have been used in the past.

5.5. Other Relevant Data

(On the following pages)

5.5.1. Zoning Map *

5.5.2. Travel Forecast Sheets

5.5.3. Suggested types of street cross-sections

* If Available

Route *SR 91*

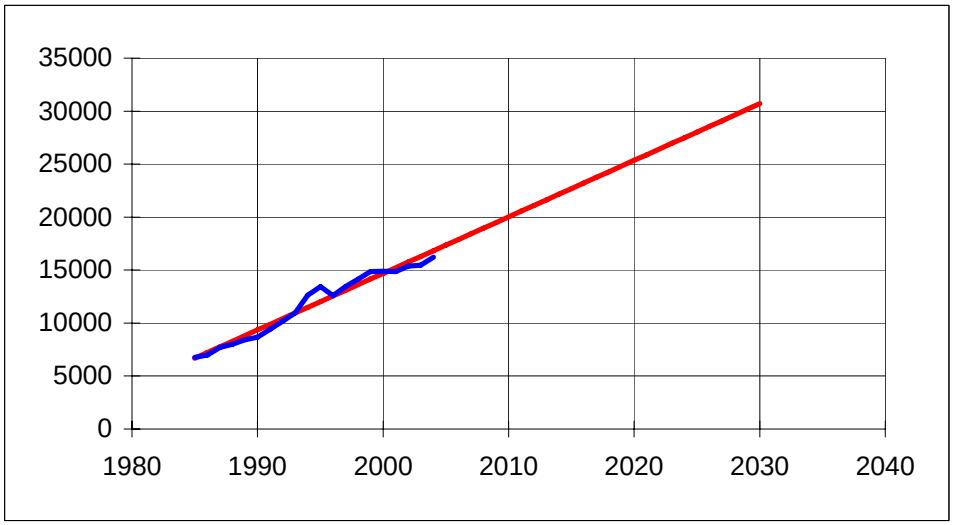
Limits *in Mantua*

Year	AADT	Forecast
1985	6,760	6679
1986	6,990	7213
1987	7,705	7746
1988	8,010	8280
1989	8,415	8814
1990	8,665	9348
1991	9,420	9881
1992	10,175	10415
1993	10,960	10949
1994	12,625	11483
1995	13,425	12016
1996	12,605	12550
1997	13,445	13084
1998	14,130	13618
1999	14,850	14151
2000	14,885	14685
2001	14,860	15219
2002	15,380	15753
2003	15,465	16286
2004	16,220	16820
2005		17354
2006		17888
2007		18421
2008		18955
2009		19489
2010		20023
2011		20556
2012		21090
2013		21624
2014		22158
2015		22691
2016		23225
2017		23759
2018		24292
2019		24826
2020		25360
2021		25894
2022		26427
2023		26961
2024		27495
2025		28029
2026		28562
2027		29096
2028		29630
2029		30164
2030		30697

12% Trucks

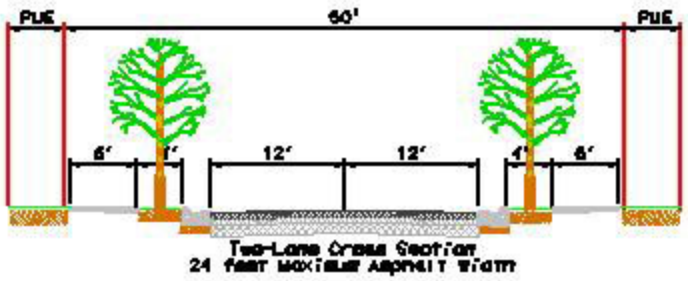
Projection based on 1985 to 2004 data

3.5% growth rate → 534 vehicles/year

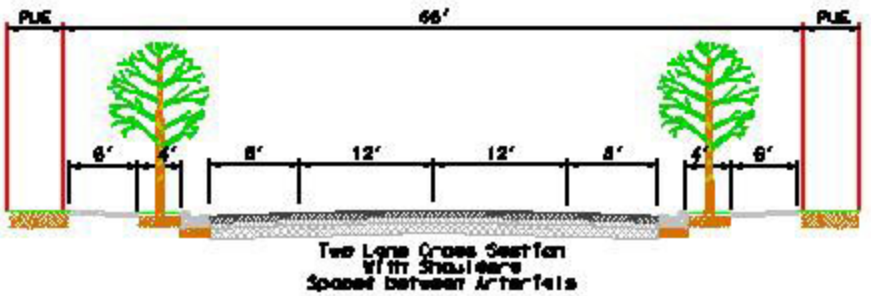


Notes

11/9/2006

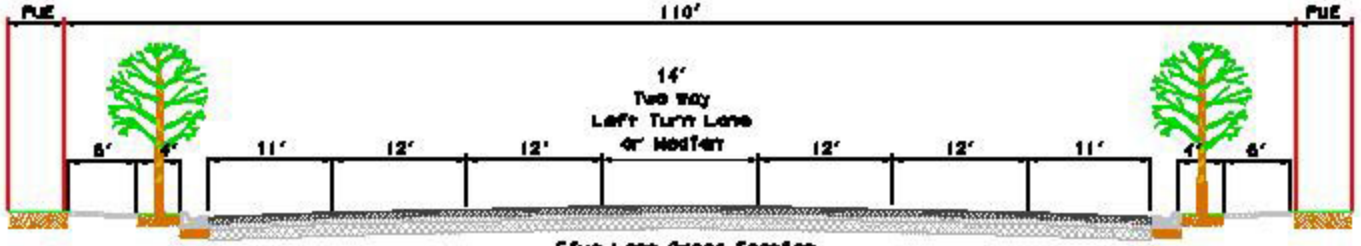


Two-Lane Cross Section
24 feet Maximum Asphalt Width



Two Lane Cross Section
With Shoulders
Spaced between Arterials

Three Lane Cross Section
With Shoulder
Spaced between Arterials



Five Lane Cross Section
With Sholders
Minimum spacing approximately ¼ mile

Notes:

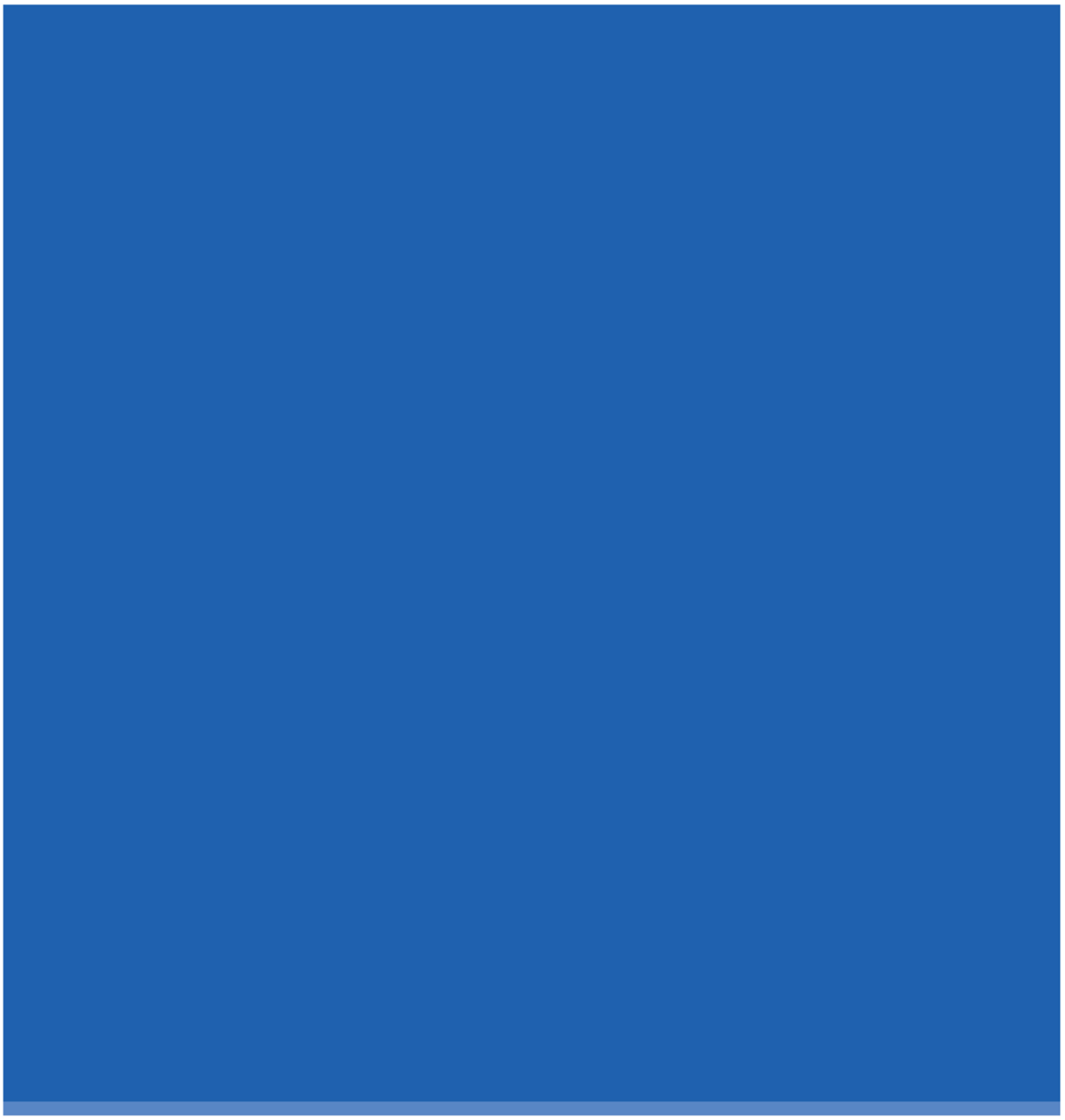
1. Sidewalk Dimension varies from 4' to 6' (See UDOT Std Dwg 08 II Note 3)
2. Public Utility Easement (PUE) dimension varies from 2.5' to 12' Typical
3. Shoulder Dimensions:
   on 80' ROW - varies from 8' to 12'
   on 110' ROW - varies from 10' to 12'
   See AASHTO A Policy on Geometric Design of Highways and Streets

10 5 0 10 20 30

Scale in Feet

Suggested Typical Cross Section

Revised: September 16, 2004



Connecting Communities

PLANNING SECTION